**Commonwealth of Kentucky**
**Division for Air Quality**

# *PERMIT STATEMENT OF BASIS AND RESPONSE TO COMMENTS*

Title V Draft No. V-01-019
CENTURY ALUMINUM OF KENTUCKY, LLC
HAWESVILLE, KY.
June 20, 2003
APRIL J. WEBB

Century Aluminum of Kentucky, LLC is a primary aluminum reduction plant that produces aluminum by electrolytic reduction of aluminum oxide (alumina). The alumina is reduced to aluminum in shallow rectangular cells called "pots". These pots are constructed of carbon-lined steel which are arranged together in a series to form a potline located in the potroom. There are currently 5 potlines in operation.

To facilitate the electrolytic reduction of alumina to aluminum, prebaked carbon blocks, are suspended above and extended down into the pot. These anodes are close to the sides of the pot with a space running down the middle of the pot for crust breaking and alumina addition. The pots and the molten aluminum serve as the cathodes for the reaction. They are heated and operated at 950°C with heat generated from the resistance between the anodes. Cryolite is used as the electrolyte for this reaction. The cryolite bath is the solvent for the raw alumina. Other fluoride containing compounds besides cryolite are added to lower the melting point of the bath. When the alumina is added, it dissolves into the molten cryolite bath and sinks to the bottom of the cell and remains as molten metal below the bath. The molten aluminum is tapped from the pots periodically during the process and is further processed in the holding furnaces, where impurities are removed by fluxing. The purified aluminum is then cast into billets, ingots, and sows for further consumer use.

A green carbon plant at the facility produces green pressed anodes made from coal tar pitch, calcined petroleum coke, and crushed anode butts recovered from the reduction cells. These anodes are baked in three anode baking ring furnaces.

A preliminary determination was made to approve the permit and a public notice was placed in The Hancock Clarion on April 10, 2003. The comment period expired on May 10, 2003 and no comments were received from the public, affected states, or EPA. Comments were received from the company. This permit is the proposed permit under the Title V program and shall become the final Title V permit unless EPA files an objection.

In conclusion, a thorough analysis has been made of all relevant information available which pertains to this application. The Division has concluded that the source will comply with all applicable air quality regulations and requirements. Compliance with the terms of the permit will ensure compliance with all air quality requirements. Therefore, it is The Division's final determination that a Title V permit should be issued as conditioned

## Response to Comments

Comments:
The company pointed out various administrative and typographical errors. (see attached e-mail)

Response: The Division has addressed each comment individually in the permit.

**Commonwealth of Kentucky**
**Division for Air Quality**

# *PERMIT STATEMENT OF BASIS*

Title V Draft No. V-01-019
CENTURY ALUMINUM OF KENTUCKY, LLC
HAWESVILLE, KY.
January 20, 2003
APRIL J. WEBB

**SOURCE DESCRIPTION:**

Century Aluminum of Kentucky LLC (Century Aluminum), operates a primary aluminum reduction plant (SIC 3353) that produces primary aluminum from the electrolytic reduction of aluminum oxide (alumina). Alumina is reduced to aluminum in cells or pots. These pots are constructed of carbon steel cells with removable hoods on top of the cells. The individual pots are arranged in series to form a potline. There are currently five (5) potlines in operation at Century Aluminum.

To facilitate the electrolytic reduction of the alumina to aluminum, prebaked carbon blocks or anodes are suspended from the superstructure above the pot and then lowered into the molten bath. The pot is lined with carbon blocks which act as the cathode and complete the electrical circuit. Alumina is added down the center line of the pot in between two rows of anodes that run parallel to each other. The pots operate at about 950 degrees C and the alumina is reduced by the heat generated by the electrolytic reaction.

Cyrolite is used as the electrolyte or catalyst for the reaction. Other fluoride containing materials are also added to the molten bath to improve the efficiency of the reaction. Molten aluminum sinks to the bottom of the cell and is drawn off periodically into crucibles for transport to another portion of the plant.

Molten aluminum is further processed in holding furnaces in the cast house. In this process, the aluminum is cleaned by fluxing or degassing, alloyed and cast into ingot, sow or billet.

Century Aluminum also operates as an integral portion of the facility a carbon plant. This process produces the anodes used in the pots. In this process, green anodes are formed by mixing coke, pitch and recycled materials into a paste. The anodes are then formed by a vibrating press. Green anodes are then cured or baked in one of three ring ovens. Once the anodes are baked, they are ready for use in the pots.

**COMMENTS:**

**General:**

Each limitation and condition specified in the permit or in any table shall be enforced separately unless otherwise stated as a combined limit.

Compliance with throughput limitations of raw materials provides reasonable assurance that limits set forth, for paved and unpaved road will be met. Therefore, no specific operational limits are being added for the roads at this time. It is assumed that the plant road's emissions will be restricted by the plant production, material and equipment operational limits.

Certain emission levels are based on AP42 emission factors and self-imposed operationing limits. Performance tests to prove AP42 emission factors for small emission units are not normally conducted, for economical reasons, unless the estimated emissions are questionable.

The alternative emission limitation for gaseous fluorides specified in Section 4(c) of Regulation 401 KAR 61:165,Existing primary aluminum reduction plants, has not been included in the permit due to the lack of documentation to support that the alternative emission limitation has been allowed in the USEPA approved SIP. Compliance with fluorides standards specified in Appendix A shall be determined with the ambient monitoring specified in the permit and in Regulation 401 KAR 61:165.

There are two (2)-existing and one (1)-new carbon bake furnaces that are considered to be one affected source because all the furnaces are controlled by a common control device.

**PSD and self-imposed concerns**:
Self-imposed net emission limitations are assured through stipulated process operation limitations.

Exceedance of listed emission limits may require reopening of this permit and a case by case determination of PSD significant net emission rates. Net increases and decreases associated with F-96-024 (Revision 5) including creditable contemporaneous increases and decreases shall be included in the determination. Exceedance of a PSD threshold limit, prior to the issuance of the required permit, will constitute a violation.

Exceedance of the coke and pitch sulfur content limits may require ambient modeling to demonstrate compliance with the NAAQS short term $SO_2$ limits.

**PSD Contemporaneous Increases**:
The cast iron melting furnace (oxy-fuel) emissions are included as contemporaneous increases as well as the Southwire Rod Mill melt furnace #3, holding furnaces #3 and #4, 2 melt/hold furnaces constructed in 1997, and the shaft melt furnace. For PSD purposes Southwire is considered to be a part of Century; therefore, increases at one plant must be considered at the other for PSD regulations.
The carbon bake's creditable reduction has been based on the emission factor derived from the performance test and the existing carbon bake furnaces' two year average throughput as reported in the KYEIS for the baseline years 1993 and 1994.

**NOx Emissions:**
The performance tests will verify the amount of NOx emitted per unit of natural gas consumed. Thus allowing the calculation of an appropriate emission factor. Because propane is rarely used no performance test is being required. Any adjustment to the fuel usage rates will be processed in accordance with 401 KAR 52:020. Aluminum flux and melt furnaces have self-imposed fuel usage limits to limit the NOx contribution to the increases associated with the construction of potline 5. All of the new carbon bake furnace's NOx emissions are included in the increases while all other emission units have both baseline emissions and increases associated with the construction. Records of the type and amount of fuel, other furnace settings in conjunction with the required stack test will provide reasonable assurance that limits are being met. The emission factor in mmcf of natural gas as permitted in F-96-024 (Revision 5) for the carbon bake furnace, will be replaced by a number determined during the stack test conducted for this furnace (emission point 09). If a larger variations of NOx emissions are noted during the performance test, additional monitoring may be required. Such additional requirements will be added to the permit as specified in 401 KAR 52:020. The emission factors derived from the required performance test shall be used to estimate the NOx emissions. Emission factors will be replaced with the factors derived during the performance tests. Self-imposed limits will need to be adjusted and/or the issuance of a PSD permit if the emission factors are different.

**EMISSION AND OPERATING CAPS DESCRIPTION:**

***TABLE 1: NEW & MODIFIED EMISSION UNITS:***

| *Emission Point* | *Emission Unit* | *EMISSIONS LIMITATIONS* | | | *Pollutant* | *Process operational limits units/month* | *General Conditions record keeping & compliance* | *Regulatory Authority* |
|---|---|---|---|---|---|---|---|---|
| | | *Lbs/hr* | *TPY* | *Lbs/unit [1]* | | | | |
| 09(09) | Carbon baking | 164.3<br>55.69 | 719.7<br>243.9 | 2112.43 | CO | 56 MMCF natural gas + pitch and pet coke (existing)<br>19 MMCF natural gas + pitch and pet coke (new) | 40 | BACT |
| | | 0.64 | 2.78 | 0.0200 | HF | 23,167 tons of aluminum | | 60:190 |
| | | 0.064 | 0.28 | 0.002 | Part. Fluoride | 23,167 tons of aluminum | | BACT |
| | | 3.16 | 13.83 | | $PM_{10}$ [2] | 18,083 tons of green anode<br>7,844 tons of packing coke | | Self-imposed |
| | | | 120.43<br>40.01<br>6.41 | 353.51 | $NO_X$ | 56 MMCF natural gas (existing)<br>19 MMCF natural gas (new)<br>56.25 Mgallons propane | | Self-imposed |
| | | 118.17 | 517.6 | 5.000 | $SO_2$ [2] | 18,083 tons of green anode<br>& General Condition # 33 | | BACT |
| | | 4.33 | 18.96 | 0.175 | VOC [2] | 18,083 tons of green anode | | BACT |
| P5 (37) | Potline 5 | 2643 | 11576.34 | 350.55 | CO | 5,500 tons of aluminum | 41 | BACT |
| | | 9.04 | 39.60 | 1.200 | TF | 5,500 tons of aluminum | | Self-imposed & 60:190 |
| | | 31.5 | 137.97 | | $PM_{10}$ | 5,500 tons of aluminum | | Self-imposed |
| | | 7.44 [3]<br>364.52 [4] | 32.57 [3]<br>1596.604 [4] | 49.356 | $SO_2$ | 5,500 tons of aluminum | | BACT/NAAQS |
| | | 8.29 | 36.30 | 1.100 | VOC | 5,500 tons of aluminum | | BACT |
| 38(38) | 6 Alumina storage facilities | 0.0597 [5] | 0.2610 | 0.00116 | $PM_{10}$ | 37,500 tons of alumina | 42 | Self-imposed |
| 39(39) | Alumina handling system | 0.32 [5] | 1.41 | 0.014 | $PM_{10}$ | 16,792 tons of alumina | 42 | Self-imposed |
| 40(40) | Ballmill | 0.26 [5] | 1.14 | 0.0174 | $PM_{10}$ | 10,950 tons of coke/pitch | 42 | Self-imposed |
| PR(-) | 0.4 mile plant road | 0.42<br>2.15 | 1.84<br>9.23 | NA | $PM_{10}$<br>PM | | 43 | Self-imposed |
| 42(-) | Cooling tower | 0.29 | 1.25 | NA | $PM_{10}$ | | 43 | Self-imposed |

1. Pounds per unit refers to the unit listed in the process operations limits column. 2. Pounds per hour and tons per year limitations include products of combustion. The pounds per unit do not. Self-imposed are regulatory limitations that the source requested to either avoid triggering a PSD threshold or to make a decrease and/or control equipment federally enforceable. Regulation 401 KAR 60:190 is the same as 40 CFR 60, Subpart S. Annual emission limitation shall be based on 12 consecutive months, monthly limitations shall be based on 30 consecutive days. Gaseous and particulate fluoride limitations may be added and measured as total fluoride. 3. Roof monitors. 4. Stack 5. As required by 59:010 and represents a one month average. 6. Each limitation and condition shall be enforced separately. 7. $PM_{10}$ represents total particulates unless specified differently.

## ***TABLE 2:***

| ***Emission point*** | ***Emission unit*** | OPACITY | Process operational limits unit/month |
|---|---|---|---|
| 01 | Vacuum Unload | <20% | 146,000 tons of coke |
| 02 | RR Unload | <20% | 146,000 tons of $AlF_3$ |
| 03 | Convey Coke | <20% | 146,000 tons of coke |
| 04 | Convey $Al_20_3$, Coke | <20% | 146,000 tons of alumina |
| 06 | Conveyor to Coke Silos | <20% | 146,000 tons of coke |
| 07 | Green Carbon Crushing/Screening (Fines) | <20% | 7,300 tons of coke |
| 08 | Green Carbon Paste Production | <20% | 18,250 tons of coke/pitch |
| | Green Carbon Roll Crusher (Paste Production) | <20% | 18,250 tons of coke/pitch |
| | Green Carbon Bucket Elevator (Paste Production) | <20% | 18,250 tons of coke/pitch |
| | Green Carbon Handling (Paste Production) | <20% | 18,250 tons of coke/pitch |
| 10 | 100 Ton Silo Pack Coke | <20% | 234.3 tons of fluid coke |
| 11 | Baked Anode Cleaning | <20% | 234.3 tons of fluid coke |
| 12 | Packed Coke Waste (20 T Silo) | <20% | 234.3 tons of fluid coke |
| 14 | Anode Stub Hole Dryer Tumbler | <20% | 333.3 tons of thimbles |
| 15 | Anode Spray Nat Gas | NA | 2.9 MCF of natural gas |
| | Anode Spray Al Melt Furnace | <20% | 166.7 tons of aluminum |
| 16 | Spent Anode Cleaning | <20% | 3,500 tons of bath material |
| 17 | Anode Butt Shot Cleaner | <20% | 6,250.9 tons of anodes |
| 18 | Anode Butt Primary Crusher #1 | <20% | 6,250.9 tons of anodes |
| | Anode Butt Primary Crusher #2 | <20% | 6,250.9 tons of anodes |
| 19 | Anode Butt Secondary Crusher | <20% | 6,250.9 tons of anodes |
| | Anode Butt Tertiary Crusher | <20% | 6,250.9 tons of anodes |
| 20 | Crushed Butts Convey | <20% | 6,250.9 tons of anodes |
| 21 | Anode Bar Stub Welding | <20% | 1.1 tons of welding rod |

***TABLE 2: (continued):***

| *Emission point* | *Emission unit* | OPACITY | Process operational limits unit/month |
|---|---|---|---|
| 22 | Bath Reclaim Crusher | <20% | 3,750 tons of reclaimed bath |
| | Bath Reclaim Screw Conveyor | <20% | 3,750 tons of reclaimed bath |
| | Bath Reclaim Bucket Elevator | <20% | 3,750 tons of reclaimed bath |
| | Bath Reclaim Conveyor | <20% | 3,750 tons of reclaimed bath |
| | Bath Reclaim Screen | <20% | 3,750 tons of reclaimed bath |
| 28 | 2 Melt and flux furnaces | < 20% | * |
| 29 | 76,000 lbs aluminum melt and hold furnace | < 20% | * (Maximum hourly aluminum charging shall not exceed 12.5 tons.) |
| 32 | Spent Potliner | <20% | 625 tons of spent potliner |
| 33 | Shell Repair Weld | <20% | 0.42 ton of welding rod |
| | Shell Repair Weld | <20% | 0.42 ton of welding rod |
| 34 | Green Anode Conveying | <20% | 18,083 tons of green anodes |
| | | | |

* Combined natural gas usage shall not exceed 185.3 million cubic feet for any consecutive 12 month period. Combined propane usage shall not exceed 150 thousand gallons for any consecutive 12 month period. Combined aluminum processing rate shall not exceed 23,167 tons per month.

**PERIODIC MONITORING:**

**Emission Group 1** **Table 1.0**

| Emission Point | Construction/modification date | Description | Type of Control | Emission Limitations | Operation Limits / Month |
|---|---|---|---|---|---|
| 45 [21(N213)] | **1996** | Metal Processing Unit | **Baghouse** | **—** | **N/A** |
| 36 [24(N240)] | **1994** | Oxy Fuel Furnace | **Baghouse** | **4.16 lb/hr** | **914.58 tons 3.5672 mmcf natural gas** |
| 33 [25(N250-33)] | **1996** | Shell Repair Building | — | **2.34 lb/hr** | **0.42 tons welding rod** |
| 47 [(47(01))] | **1999** | Anode Dust Conveyance System | — | **—** | **N/A** |
| 01 [(N01-01)] | **1996** | Vacuum Unload ore & coke | **Baghouse** | **36.25 lb/hr** | **73000 tons coke/alumina** |
| 01 [(N02-01)] | **1996** | Vacuum Unload ore & coke | **Baghouse** | **36.25 lb/hr** | **73000 tons coke/alumina** |
| 01 [(N03-*)] | **1996** | Vacuum Unload ore & coke | **Baghouse** | **36.25 lb/hr** | **146000 tons coke/alumina** |
| 02 [(N10-03)] | **1996** | Railroad unload station | **Baghouse** | **40.50 lb/hr** | **146000 tons coke/alumina** |
| 03 [(N20-03)] | **1996** | Tower 5 Transfer Point | **Baghouse** | **40.50 lb/hr** | **146000 tons coke/alumina** |
| 03 [(N21-04)] | **1996** | Tower 1 Transfer Point | **Baghouse** | **40.50 lb/hr** | **146000 tons coke/alumina** |
| 6 [05(N50-06)] | **1996** | Coke Silo No.1 | **Baghouse** | **40.50 lb/hr** | **146000 tons coke** |
| 6 [05(N51-06)] | **1996** | Coke Silo No. 2 | **Baghouse** | **40.50 lb/hr** | **146000 tons coke** |
| 11 [09(N95-11)] | **1996** | **Baked Anode Cleaning** | **Baghouse** | **1.66 lb/hr** | **234.3 tons fluid coke** |
| 14 [10(N100-14)] | **1996** | **Thimble Dust Hopper** | **Baghouse*** | **2.23 lb/hr** | **333.3 tons thimbles** |
| 14 [10(N101-14)] | **1996** | **Thimble Tumbling Mills** | **Baghouse*** | **2.23 lb/hr** | **333.3 tons thimbles** |

| | | | | | |
|---|---|---|---|---|---|
| 16 [10(N102-16)] | **1996** | **Centrol Butt Cleaning** | **Baghouse** | **9.57 lb/hr** | **3500 tons bath** |
| 15 [11(N110-15)] | **1996** | **Aluminum Melter and Baked Anode Sprayer** | **Cyclone** | **1.45 lb/hr** | **205 tons aluminum** |
| 10 [13(N130-10)] | **1996** | **200 Ton Silo Pack Coke** | **Baghouse*** | **1.66 lb/hr** | **234.3 tons fluid coke** |
| 12 [13(N131-12)] | **1996** | **Packed Coke waste (20 ton silo)** | **Baghouse*** | **1.66 lb/hr** | **234.3 tons fluid coke** |
| 18 [14(N140-18(01))] | **1996** | **Anode Butt Primary Crusher #1 & #2** | **Baghouse** | **13.71 lb/hr** | **6250.9 tons anodes** |
| 19 [14(N142-19(01)] | **1996** | **Anode Butt Secondary Crusher** | **Baghouse*** | **13.71 lb/hr** | **6250.9 tons anodes** |
| 19 [14(N143-19(02))] | **1996** | **Anode Butt Tertiary Crusher** | **Baghouse*** | **13.71 lb/hr** | **6250.9 tons anodes** |
| 14(N145-*) | **1996** | **Crushed Butt Storage Bin (2)** | **Baghouse** | **13.71 lb/hr** | **6250.9 tons anodes** |
| 17 [14(N146-17)] | **1996** | **Anode Butt Shot Cleaner(2)** | **Baghouse** | **13.71 lb/hr** | **6250.9 tons anodes** |
| 21 [15(N150-21)] | **1996** | **Anode Bar Stub Welding** | **—** | **2.34 lb/hr** | **1.1 ton welding rod** |
| 22 [17(N170-22(01))] | **1996** | **Bath Reclaim Crusher** | **Baghouse*** | **9.99 lb/hr** | **3750 tons reclaimed bath** |
| 22 [17(N171-22(02))] | **1996** | **Bath Reclaim Screw Conveyor** | **Baghouse*** | **9.99 lb/hr** | **3750 tons reclaimed bath** |
| 22 [17(N172-22(03))] | **1996** | **Bath Reclaim Bucket Elevator** | **Baghouse*** | **9.99 lb/hr** | **3750 tons reclaimed bath** |
| 22 [17(N173-22(04))] | **1996** | **Bath Reclaim Conveyor** | **Baghouse*** | **9.99 lb/hr** | **3750 tons reclaimed bath** |
| 22 [17(N174-22(05))] | **1996** | **Bath Reclaim Conveyor** | **Baghouse** | **9.99 lb/hr** | **3750 tons reclaimed bath** |
| 22 [17(N175-22(06))] | **1996** | **Bath Reclaim Screen** | **Baghouse*** | **9.99 lb/hr** | **3750 tons reclaimed bath** |

| | | | | | |
|---|---|---|---|---|---|
| 22 [17(N176-*)] | **1996** | **100 ton Silo** | **Baghouse*** | **9.99 lb/hr** | **3750 tons reclaimed bath** |
| 22 [17(N177)] | **1996** | **300 ton Silo** | **Baghouse*** | **—** | **N/A** |
| 22 [17(N179)] | | **7.5 ton Bath Reclaim Silo** | **Baghouse** | **—** | **N/A** |
| 33 [26(N250-33)] | **1996** | **Spent Potliner Building** | **Baghouse** | **3.56 lb/hr** | **625 tons spent potliner** |
| 38 [30(N300) 38] | **1996** | **6 Alumina Storage Facilities** | **Baghouse** | **41.94 lb/hr** | **Combined 37950 tons of alumina** |
| 47 [47(02)] | **1999** | **Anode Dust Storage Silo** | **Baghouse** | **2.34 lb/hr** | **N/A** |

**APPLICABLE REGULATIONS**

401 KAR 59:010, New process operations

Self-imposed limitations supersedes the mass emission standards of 401 KAR 59:010

Compliance with the listed operation limits provides reasonable assurance that the particulate matter emission limitations ($PM/PM_{10}$) are being met. The permittee shall monitor the amount and type of throughputs (specified in the table under operational limits) added to each emission unit during a calendar month. Additionally, the owner or operator shall follow the PM plan found in Appendix A. Excursions from the requirements of the PM plan shall be corrected within 24 hours; additional time may be granted for just cause.

Emission Group 2 Table 2.0

| **Emission Point** | **Construction/ modification date** | **Description** |
|---|---|---|
| 08(N90) | 1969 | Pitch Tank #1 |
| 08(N91) | 1969 | Pitch Tank #2 |
| 08(N92) | 1969 | Pitch Tank #3 |
| 35 [12(N120)] | 1969 | Cathode Heater – natural gas |
| | 2002 | 2 – 2 Ton Induction Furnaces |

**APPLICABLE REGULATIONS:**

401 KAR 61:020, Existing process operations

401 KAR 59:010, New process operations (emission point 23 (N232))

Pursuant to Regulation 401 KAR 59:010

a) Visible emissions shall not equal or exceed 20 percent opacity, as determined with Reference Method 9, Appendix A, 40 CFR 60.
b) Hourly particulate emissions as measured by Reference Method 5 (if required), Appendix A, 40 CFR 60 averaged over the minimum specified time, shall not exceed the allowable

as calculated by

$$E = 3.59P^{0.62}$$

Where E is the emissions in pounds per hour and P is the throughput in tons per hour.

Pursuant to Regulation 401 KAR 61:020:

a) Visible emissions shall not equal or exceed 40 percent opacity, as determined with Reference Method 9, Appendix A, 40 CFR 60.
b) Hourly particulate emissions as measured by Reference Method 5 (if required), Appendix A, 40 CFR 60, averaged over three hours or the minimum specified time, shall not exceed the limit calculated by the following formula:

$$E = 4.10\ P^{0.67}$$

Where P is the process weight (total weight of all throughput materials introduced into the emission unit) in tons/hour. If the process weight equals or is less than 0.5 ton/hour, then the particulate matter emission limitation shall be 2.58 lbs/hr.

Emission Group 3 Table 3.0

| **Emission Point** | **Construction/modification date** | **Description** | **Type of Control** |
|---|---|---|---|
| 04 [(N30)] | 1969 | Alumina Silo 1a | Baghouse |
| 04 [(N31)] | 1969 | Alumina Silo 1b | Baghouse |
| 04 [(N32)] | 1969 | Alumina Silo 2a | Baghouse |
| 04 [(N33)] | 1969 | Alumina Silo 2b | Baghouse |
| 04 [(N34)] | 1969 | Alumina Silo 3a | Baghouse |
| 04 [(N35)] | 1969 | Alumina Silo 3b | Baghouse |
| 04 [(N36)] | 1969 | Alumina Silo 4a | Baghouse |
| 04 [(N37)] | 1969 | Alumina Silo 4b | Baghouse |
| 25 [04(N38)] | 1969 | Airveying to Alumina Silos | Vented to Potline Emission Control System |
| 25 [04(N39)] | 1969 | Airveying to Alumina Silos | Vented to Potline Emission Control System |
| 25 [04(N40)] | 1969 | 100 ton Surge Silo | Baghouse |
| 25 [04(N41)] | 1969 | 100 Ton Surge Silo | Baghouse |
| 26 [19(N190)] | 1969 | Limestone Unloading | Baghouse |

**APPLICABLE REGULATIONS:**

401 KAR 61:020, Existing process operations

a) To provide reasonable assurance that the visible emission limitations are being met the permittee shall perform a qualitative visual observation of the opacity of emissions from each stack/vent on a weekly basis and maintain a log of the observation. The log shall note:
    1) whether any air emissions (except for water vapor) were visible from the vent/stack,
    2) all emission points from which visible emissions occurred, and
    3) whether the visible emissions were normal for the process.

b) To provide reasonable assurance that the particulate matter emission limitations are being met, the permittee shall monitor the monthly amounts and types of process weight added to each emissions unit. Excursions from the control equipment's operating ranges shall be promptly corrected.

**Emission Group 4** **Table 4.0**

| Emission Point | Construction/modification date | Description | Operation Limits / Month |
|---|---|---|---|
| 01 [(N04)] | 1996 | Conveyor-barge to Tower 1 | 146000 tons coke |
| 02 [(N11-*)] | 1996 | Conveyor- Railroad to Tower 5 | 146000 tons aluminum fluoride |
| 03 [(N22-*)] | 1996 | Conveyor – Tower 1 & Tower 5 | 146000 tons coke |
| 03 [(N23-*)] | 1996 | Conveyor – Tower 1 to alumina silos | 146000 tons coke |
| 03 [(N24-06)] | 1996 | Conveyor to coke silos | 146000 tons coke |
| 04 [(N42)] | 1996 | Alumina Handling Fugitives | N/A |
| 11 [09(N96-11)] | 1996 | Baked Anode Dust Bin | 234.3 tons fluid coke |
| 09 [(N97-*)] | 1996 | Fluid Coke Dust Bin | 234.3 tons fluid coke |
| 21 [10(N103-*)] | 1996 | Anode Bar Stub Grinding | 51.25 tons anode bars |
| 21 [10(N104-*)] | 1996 | Anode Bar Stub Grinding | 51.25 tons anode bars |
| 20 [14(N144-20)] | 1996 | Crushed Butts Conveyor | 6250.9 tons anodes |
| 18 [14(N147-*)] | 1996 | Primary crushing Fugitives | 6250.9 tons anodes |
| 14(N148-*) | 1996 | Secondary Crushing Fugitives | 6250.9 tons anodes |
| 22 [17(N178-*)] | 1996 | Bath Reclaim Fugitives | 3750 tons reclaimed bath |
| 39 [39] | 1996 | Alumina Handling System | 16792 tons of alumina |
| PR(-) | 1996 | 0.4 Mile Plant Road (expansion) | N/A |
| 28(N280) | — | Paved Roads | |
| 28(N280) | — | Unpaved Roads | |
| 42 [34(34)] | 1999 | Cooling Tower Fan Exhaust | N/A |

**APPLICABLE REGULATIONS:**

401 KAR 63:010, Fugitive emission

To provide reasonable assurance that the fugitive dust emissions will not be visible beyond the plant's property the permittee shall monitor the conditions of the roadways and other fugitive dust emission units and when appropriate take action to minimize dust.

42(-) Cooling Tower

**APPLICABLE REGULATIONS:**

40 CFR 63 Subpart Q, National emission standards for hazardous air pollutants for industrial process cooling towers

The use of chromium based water treatment chemicals is prohibited.

The permittee shall monitor the chemicals put into the cooling tower water and maintain the corresponding MSDS for chemicals used.

**18 (N180, N181)**

**Description: Potlines 1-4 & roof monitors**
**Primary aluminum reduction potlines**
**Center-worked prebake three (CWPB3) potlines**
**Combined maximum hourly rated capacity: 24.2 tons**
**Combined maximum yearly rated capacity: 212000 tons**
**Installation date: 1969**

**Control System: Wet scrubber system:**
**4 Multiclones**
**8 Electrostatic precipitators**
**12 Wet scrubbers**

**APPLICABLE REGULATIONS:**

Regulation 40 CFR Part 63 Subpart LL, National emission standards for hazardous air pollutants for primary aluminum reduction plant.
Regulation 401 KAR 61:165, Existing primary aluminum reduction plants.
401 KAR 61:020, Existing process operations (superceded by 40 CFR 63, Subpart LL).

To assure compliance with the visible emissions, semi-annual method 9 readings will be performed.

**Compliance Demonstration:**
Compliance with the applicable monthly individual emissions of TF

$E_p = [(C_{s1} \times Q_{sd})_1 + (C_{s2} \times Q_{sd})_2]/ (P \times K)$ **equation 1** *(63.847(e))*

Where $E_p$ is the emission rate of total fluorides from each potline in lb/ton, $C_{s1}$ is the concentration of total fluorides from the primary control system in mg/dscf, $Q_{sd}$ is the volumetric flow rate of effluent gas corresponding to the appropriate subscript location in dscf/hr, $C_{s2}$ is the concentration of total fluorides as measured for roof monitor emissions in mg/dscf, P is the aluminum production rate in ton/hr, K is the conversion factor 453,600 mg/lb. The aluminum production rate (P) shall be determined by dividing the number of hours in the calendar month into the weight of aluminum tapped during the calendar month that includes the three runs for a performance test.. 1 denotes the subscript for primary control system effluent gas, and 2 denotes the subscript for the roof monitors effluent gas. The concentration and volumetric flow rate for the primary control system shall be determined from the previous 12-month average of all performance test runs (63.848(a)). The concentration and volumetric flow rate for the roof monitor shall be determined using the monthly average from at least three performance test runs(63.848(a)) performed on each potline.

Compliance with the applicable monthly average emissions of TF listed above shall be determined using equation 1 except that the sum of emissions from each potline included in the group, determined separately using the numerator, is divided by the total aluminum production from all of the potlines comprising the group for the month. The monthly average emissions (in lb/ton) of secondary emissions (roof monitor) and TF from the primary control system for each potline shall be determined using test provisions specified below and calculated using the numerator in equation 1. At least three performance test runs per potline each month must be performed for the secondary emission. The results of the secondary emissions shall be combined with the TF results for the primary control system (s) and divided by the total aluminum production. Each potline's average hourly production rate shall be determine by dividing the number of hours in the calendar month into the weight of aluminum tapped during the calendar month that includes the three runs for a performance test. The average hourly production for the potlines comprising the group shall be combined to determine the total aluminum production.

Any potline, other than a reconstructed potline, that is changed such that its applicable subcategory also changes, shall meet the applicable emission limit in 40 CFR 63 §63.843(a)(1) for the original subcategory, center-worked prebake three (CWPB3), or the new subcategory, whichever is more stringent.

a) To provide reasonable assurance that the visible emission limitations are being met the permittee shall:
    i) perform visual opacity readings on the stack or vent using Reference Method 9 on a semi-annual basis, or more frequently if requested by the Division. Opacity readings shall be conducted while the emission units are in operation.
    ii) perform a qualitative visual observation of emissions from each stack/vent on a daily basis and maintain a log of the observation. The log shall note:
        1) whether any air emissions (except for water vapor) were visible from the vent/stack,
        2) all emission points from which visible emissions occurred, and
        3) whether the visible emissions were normal for the process.

iii) determine the opacity of emissions by Reference Method 9 if abnormal visible emissions are observed.

b) To provide reasonable assurance that the particulate matter emission limitations are being met, the permittee shall monitor the monthly amounts and types of process weight added to each emissions unit and the operating parameters of each control device. Excursions from the control equipment's operating ranges shall be promptly corrected as per the provisions of the Startup, Shutdown and Malfunction Plan.

Pursuant to 401 KAR 61:165:
The permittee shall maintain systems to determine the daily weight of aluminum produced.
The permittee shall maintain ambient air monitoring equipment for fluoride and monitor the raw material feed rates and cell or potline voltage.

Pursuant to 40 CFR 63 §63.848(a),

a) The TF emissions from each potline shall be monitored through "monthly" performance tests specified in the testing requirement section and in 40 CFR 63 Subpart LL. TF emissions shall be computed and recorded using equation 1. "If a reduced sampling frequency is approved the TF emissions from each potline shall be monitored quarterly using the approved test schedule and methods. Compliance with TF emissions shall be computed and recorded quarterly using equation 1. If prior approval for alternative

monitoring for similar potline has been granted monthly monitoring shall be performed using the approved alternative monitoring procedures to demonstrate compliance with the alternative emission limit for each similar potline as well monitoring one of the similar potlines using monthly performance tests to demonstrate compliance with the TF 2.5 lbs/ton of aluminum produced limit.

A reduced sampling frequency has been requested for potlines 1,2 and 4. These potlines shall be monitored quarterly. Potline 3 shall remain under the monthly monitoring until a request for reduced sampling is submitted.

b) The daily amount of aluminum tapped from the each potline shall be monitored and recorded. To determined the amount of aluminum tapped the owner or operator shall install, operate, and maintain a monitoring device. Calibration must be performed in accordance with the manufacturer's instructions.

c) The owner or operator shall visually inspect the exhaust stack(s) of each control device on a daily basis for evidence of any visible emissions indicating abnormal operation.

d) (1) The owner or operator shall maintain a continuous parameter monitoring system for each emission control device.

(2) If the monitoring system for a primary control device measures an operating parameter outside the range required to be established pursuant to §63.847(h), or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the owner or operator shall initiate the corrective action procedures identified in the Startup, Shutdown, and Malfunction Plan within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation.

(3) If the range for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period.

e) The owner or operator shall monitor the actions taken during any startup, shutdown, and malfunction event.

f) The TF emissions can be measured from one potline and monitor other similar potlines by alternative procedures provided the permittee demonstrates that the potlines are similar.

**P5 (37) Potline 5 & roof monitors**

**Description:**

**Primary aluminum reduction potline**
**Center-worked prebake one (CWPB1) potline**
**Maximum hourly rated capacity: 7.53 tons**
**Maximum yearly rated capacity: 66000 tons**
**Installation date: 1998**
**Control Equipment: Dry alumina scrubber system**

**APPLICABLE REGULATIONS:**

Regulation 40 CFR Part 63 Subpart LL, National emission standards for hazardous air pollutants for Primary Aluminum Reduction Plants.
401 KAR 59:010, New process operations

Self-imposed limitations supersedes the mass emissions standards prescribed by 401 KAR 59:010, New process operations.
Regulation 401 KAR 51:017, PSD applies to $NO_x$ carbon monoxide and sulfur dioxide emissions

**Compliance Demonstration:**
The following equation will be used to demonstrate compliance with the Subpart LL requirements (63.87(e)):

$E_p = [(C_{s1} \times Q_{sd})_1 + (C_{s2} \times Q_{sd})_2]/ (P \times K)$ **Equation 1**

Where $E_p$ is the emission rate of total fluorides from the potline in lb/ton, $C_{s1}$ is the concentration of total fluorides from the primary control system in mg/dscf, $Q_{sd}$ is the volumetric flow rate of effluent gas corresponding to the appropriate subscript location in dscf/hr, $C_{s2}$ is the concentration of total fluorides as measured for roof monitor emissions in mg/dscf, P is the aluminum production rate in ton/hr, K is the conversion factor of 453,600 mg/lb, $_1$ denotes the primary control system effluent gas, and $_2$ denotes the secondary control system or roof monitor effluent gas. The aluminum production rate (P) shall be determine by dividing the number of hours in the calendar month into the weight of aluminum tapped during the calendar month that includes the three runs for a performance test.. The concentration and volumetric flow rate for the primary control system shall be determined from the previous 12-month average of all performance test runs (63.848(a)). The concentration and volumetric flow rate for the roof monitor shall be determined using the monthly average from at least three performance test runs(63.848(a)).

To provide reasonable assurance that the visible emission limitations are being met the permittee shall perform weekly visible emission readings on potline 5's roof monitors and stack using Reference Method 9.

a) To provide reasonable assurance that the particulate matter emission limitations ($PM/PM_{10}$) are being met, the permittee shall monitor the amount and type of operational throughput monthly added to each emission unit as specified above as well as conduct an annual performance test. The owner or operator shall *continuously* monitor the air flow rate and pressure drop across the baghouses. Monthly particulate emissions shall be calculated for each emission as follows:

PE = (TP x PEF)/ 2000 lbs/ton

Where PE = particulate emissions/$PM_{10}$ in tons emitted per month, TP = actual throughput (operation limit) in tons/month, and PEF = particulate emission factor in lbs/ton of throughput. The particulate emission factors shall be the number determined from the most recent compliance test required in the above Testing Requirement Section or other emission test or emission factors approved by the Division.

Pursuant to 40 CFR 63 §63.848(a),

a) The TF emissions shall be monitored through "monthly" roof monitor performance tests specified in the testing requirement section and in 40 CFR 63 Subpart LL. TF emissions shall be computed and recorded using equation 1. If a reduced sampling frequency is approved the TF emissions from the roof monitors shall be monitored quarterly using the approved test schedule and methods. Compliance TF emissions shall be computed and recorded quarterly using equation 1.
b) The daily amount of aluminum tapped shall be monitored and recorded. To determined the

amount of aluminum tapped the owner or operator shall install, operate, and maintain a monitoring devise. Calibration must performed in accordance with the manufacturer's instructions.

c) The owner or operator shall visually inspect the exhaust stack(s) of each control device on a daily basis for evidence of any visible emissions indicating abnormal operation.

d)(1) The owner or operator shall maintain a continuous parameter monitoring system for the emission control device. Unless prior written approval by DAQ for alternative control device operating parameters has been granted, the owner or operator shall, as a minimum, install for the dry alumina scrubbers devices for the measurement of alumina flow and air flow.

(2) If a monitoring device for a primary control device measures an operating parameter outside the range(s) required to be established pursuant to §63.847(h), or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the owner or operator shall initiate the corrective action procedures identified in the startup, shutdown, and malfunction plan within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation.

(3) If the range for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period.

e) The owner or operator shall monitor the actions taken during any startup, shutdown, and malfunction event as provided for in 40 CFR 63.6(e)(3).

Monthly throughputs shall be monitored and recorded to assure compliance with the operational limits.

Aluminum production shall be recorded and monitored.

**09 (N94) Carbon Bake Furnace**

**Description:**

**Self-imposed monthly limit: 18,083 tons per month of green anodes**
**8,900 tons per month of packing coke**
**New carbon bake furnace installation date: 1999**
**Two existing carbon bake furnaces installed: 1969**
**Control equipment: dry alumina scrubber system:**

**APPLICABLE REGULATIONS:**

Regulation 40 CFR Part 63 Subpart LL, National emission standards for hazardous air pollutants for Primary Aluminum Reduction Plants

401 KAR 59:010, New process operations applies to the visible emissions

Self-imposed limitations supersedes the mass emissions standards prescribed by 401 KAR 59:010

401 KAR 51:017, Prevention of significant deterioration of air quality (PSD) applies to carbon monoxide, $NO_x$ and sulfur dioxide emissions

**Compliance Demonstration:**

Compliance with the POM and TF emission rates shall be determined by the following equations:

For TF

$E_b = (C_s \times Q_{sd})/( P.B. \times K)$ equation 2

where $E_b$ is the emission rate of TF in lb/ton of green anodes produced; $C_s$ is the concentration of TF in mg/dscf; $Q_{sd}$ is the volumetric flow rate of effluent gas in dscf/hr; P.B. is the quantity of green anode material placed in the furnace in ton/hr; and K is the conversion factor of 453,600 mg/lb.

For POM

$E_b = (C_s \times Q_{sd})/( P.B. \times K)$ equation 3

where $E_b$ is the emission rate of POM in lb/ton of green anodes produced; $C_s$ is the concentration of POM in mg/dscf; $Q_{sd}$ is the volumetric flow rate of effluent gas in dscf/hr; P.B. is the quantity of green anode material placed in the furnace in ton/hr; and K is the conversion factor of 453,600 mg/lb.

The rate of green anode material introduced into the furnace ($_{P.B.}$) shall be determined by dividing the number of operating hours in the calendar month into the weight of green anode material used during the calendar month in which the performance test was conducted.

The permittee shall monitor and record the monthly fuel usage rates of natural gas and propane of the new and existing ovens separately.

a) Monthly throughputs shall be monitored and recorded to assure compliance with the operational limitations found in the Description section.
b) Sulfur contents of the coke and coal tar pitch shall be recorded and determined with an ASTM standard or alternative method each method shall be approved by the Division. The method used to determination sulfur content of coke shall assure that the average percent sulfur by weight of each shipment of coke will not exceed 3.0 percent. The percent sulfur by weight of the coal tar pitch shall be determined by weekly ASTM or alternative sampling of each of the coal tar pitch storage tanks.
c) Annual performance testing as specified in the testing requirement section.
d) Green anode monthly consumption and amount of aluminum produced shall be recorded and monitored. (Based on 30 consecutive days)
e) Carbon bake furnaces' fuel usage rates of natural gas and propane and furnace finish temperature shall be recorded and monitored monthly. The existing and new furnaces natural gas consumption rate shall be monitored separately.
f) Dry scrubber operational parameters as per the parametric plan shall be constantly monitored and any excursion shall be recorded.
g) Records of the VOM contents of the coal tar pitch and petroleum coke shall be maintained.
h) To provide reasonable assurance that the visible emission limitations are being met the permittee shall perform weekly visible emission readings on the carbon bake furnaces' primary control system stack using Reference Method 9. Additionally, compliance

assurance will be provided by the periodic monitoring specified in 40 CFR 63 Subpart LL.

i) To provide reasonable assurance that the particulate matter emission limitations (PM/ $PM_{10}$) are being met, the permittee shall monitor the amount and type of process throughput monthly added to each emission unit as well as conduct annual performance test. The owner or operator shall *continuously* monitor the air flow rate and pressure drop across the baghouses. Excursions from the control equipment's operating ranges shall be promptly corrected as per the Startup/Shutdown Malfunction Plan. Monthly particulate emissions shall be calculated for each emission unit as follows:

PE = (TP x PEF)/ 2000 lbs/ton

Where PE = particulate emissions/$PM_{10}$ in tons emitted per month, TP = actual throughput (operation limit) in tons/month, and PEF = particulate emission factor in lbs/ton of throughput. The particulate emission factors shall be the number determined from the most recent compliance test required in the above Testing Requirement Section or other emission test or emission factors approved by the Division.

j) Using the procedures in §63.847, in the approved test plan, and in the test requirement section above the owner or operator shall monitor TF and POM emissions from each anode bake furnace on an annual basis.

k) The amount of green anode material place in the furnace shall be monitored and recorded. The weight may be determined by monitoring the weight of all anodes or by monitoring the number of anodes placed in the furnace and determining an average weight from measurements of a representative samples of anodes.

l) The owner or operator shall visually inspect the exhaust stack of the control device on a daily basis for evidence of any visible emissions indicating abnormal operation.

m)(1) The owner or operator shall install, operate, calibrate (performed in accordance with the manufacturer's instructions), and maintain a continuous parameter monitoring system for each emission control device. Unless prior written approval by DAQ for alternative control device operating parameters has been granted, the owner or operator shall, as a minimum, install for the dry alumina scrubbers devices for the measurement of alumina flow and air flow.

(2) If a monitoring device for a primary control device measures an operating parameter outside the limit(s) required to be established pursuant to §63.847(h), or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the owner or operator shall initiate the corrective action procedures identified in the startup, shutdown, and malfunction plan within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation.

(3) If the limit for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period.

n) The owner or operator shall monitor the actions taken during any startup, shutdown, and malfunction event.

## Green Carbon Anode Production and Handling
## Emission Group: Dry Circuit Table 5.0

| Emission Point | Construction/ modification date | Description | Type of Control | Emission Limitations | Operation Limits / Month |
|---|---|---|---|---|---|
| **8 [07(N80-08(01))]** | **1996** | **Green Carbon Roll Crusher** | **Baghouse*** | **26.64 lb/hr** | **15,512/tons** |
| **8 [07(N81-08(02))]** | **1996** | **Green Carbon Bucket Elevator** | ***** | **26.64 lb/hr** | **15,512/tons** |
| **8 [06(N61-07)]** | **1996** | **Transfer Tower** | ***** | **15.09 lb/hr** | **15,512/tons** |
| **8 [06(N62-07)]** | **1996** | **Carbon Conveyor** | ***** | **15.09 lb/hr** | **15,512/tons** |
| **7 [06(N63-07)]** | **1996** | **Fines Collector** | ***** | **15.09 lb/hr** | **15,512/tons** |
| 7 [06(N60) 07] | **1996** | **10 ton Ballmill** | **Baghouse** | **15.09 lb/hr** | **7300 tons of coke/pitch** |
| 40 [32(N320) 40] | **1996** | **15 ton Ballmill** | **Baghouse** | **19.41 lb/hr** | **10950 tons of coke/pitch** |
| **8 [06(N64-07)]** | **1996** | **Fraction Bins and Feeder** | ***** | | **15,512/tons** |
| **8 [06(N65-*)]** | **1996** | **Dust from Internal Conveyors** | ***** | | **15,512/tons** |
| **8 [06(N66-*)]** | **1996** | **Dust from Internal Conveyors** | ***** | | **15,512/tons** |
| **8 [06(N67-07)]** | **1996** | **Double-roll Crushing** | ***** | **15.09 lb/hr** | **15,512/tons** |
| 8 [06(N68-*)] | **1996** | Conveyor Vent | ***** | | **15,512/tons** |
| 8 [06(N69-*)] | **1996** | Green Carbon Conveyor to Carbon Bake Cranes (multi-purpose conveyor) | ***** | | **15,512/tons** |

***All sources to a common Baghouse**

## Emission Group: Hot Circuit Table 6.0

| Emission Point | Construction/ modification date | Description | Type of Control | Emission Limitations | Operation Limits / Month |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| **34 [16(N160)]** | **1996** | **Anode Vibrator Press** | **Dry Coke Scrubber** | | **N/A** |
| **34 [16(N161)]** | **1996** | **Green Anode Conveying** | | | **N/A** |
| **34 [07(N83)]** | **1996** | **Hot Anode Paste Conveyor** | **Dry Coke Scrubber** | | **N/A** |
| **34 [07(N84)]** | **1996** | **Green Mix Reject Piles** | **Dry Coke Scrubber** | | **N/A** |
| **34 [07(N85-08(03))]** | **1996** | **Green Carbon Handling** | **Dry Coke Scrubber** | | **18250 tons coke/pitch** |
| **08(N93)** | **1996** | **Pitch day tank** | **Carbon Absorber** | | **2583 tons/month pitch** |
| | | | | | |
| | | | | | |

**Description**

**Raw material: coke, pitch, and recycled anodes and butts**
**Maximum monthly rated capacity of green anodes: 18,250 tons (self-imposed)**
**Maximum yearly rated capacity of green anodes: 219,000 (self-imposed)**
**Installation date: 1996**

**APPLICABLE REGULATIONS:**

Regulation 40 CFR Part 63 Subpart LL, National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants.
401 KAR 59:010, New process operations

The permittee must operate a dry coke scrubber.

Pursuant to 401 KAR 59:010:

a) To provide reasonable assurance that the visible emission limitations are being met the permittee shall:
   i) perform quarterly, or more frequently if requested by the Division, opacity reading from each stack or vent using Reference Method 9. Opacity readings shall be conducted while the emission units are in operation.
   ii) Perform weekly qualitative visual observation of the opacity of emissions from each stack/vent and maintain a log of the observation. The log shall note:
      1) whether any air emissions (except for water vapor) were visible from the vent/stack,
      2) all emission points from which visible emissions occurred, and
      3) whether the visible emissions were normal for the process
   iii) determine the opacity of emissions by Reference Method 9 if abnormal visible emissions are observed.

b) Compliance with the listed operational limits provides reasonable assurance that the particulate matter emission limitations (PM/$PM_{10}$) are being met. The permittee shall monitor the amount and type of throughputs added to each emission unit during a calendar month. Additionally, the owner or operator shall monitor once a month the air flow rate and pressure drop across the baghouses while the emission unit is operating. Excursions from the control equipment's operating ranges shall be

corrected within 24 hours; additional time may be granted for just cause.

Pursuant to 40 CFR 63 Subpart LL:

a) The owner or operator shall maintain a continuous parameter monitoring system for each emission control device. A description of the parameters to be monitored, the operating limits, and the monitoring frequency to ensure that the control devices are being properly operated and maintained, and an explanation of the criteria used for their selection and how they relate to the emission control shall be submitted. Unless prior written approval by DAQ for alternative control device operating parameters has been granted, devices for the measurement of coke flow and air flow shall be installed for the dry coke scrubbers.
b) The owner or operator shall visually inspect the exhaust stack(s) of each control device on a daily basis for evidence of any visible emissions indicating abnormal operation.
c) If a monitoring device for a primary control device measures an operating parameter outside the limit(s) required to be established pursuant to §63.847(h), or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the owner or operator shall initiate the corrective action procedures identified in the startup, shutdown, and malfunction plan within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation.
d) If the limit for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period.
e) The owner or operator shall monitor the actions taken during any startup, shutdown, and malfunction event.

**21(N214-46)**

**Description:** Molten metal inline degassing unit with a capacity of 40,000 pounds per hour with a scrubber for control

Construction commenced: March 2001

**APPLICABLE REGULATIONS:**

401 KAR 59:010, New process operations

40 CFR 63 Subpart RRR, National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production

**Compliance Demonstration Method:**

To determine compliance with the HCL and PM emissions the following equation will be used:

$$E= (C*Q*K_1)/ P$$

Where E = Emission rate of PM or HCl (lb/ton)

C = Concentration of PM or HCl (gr/dscf)

Q = Volumetric flow rate of exhaust gases(dscf/hr)

$K_1$ = Conversion factor, 1 lb/7,000 gr; and

P = Production rate, ton/hr

The permittee shall monitor the weight of feed or charge and develop an operation, malfunction and maintenance plan. Labels shall be inspected once per month to ensure that they are intact and legible. The total reactive flux injected must be monitored for each operating cycle as specified in 63.1510(j)

**Group 5**
**21(N210,N211,N212)**
**Description: Aluminum casting furnaces 1 and 3**
Construction modification: 1996
**22(N220)**
**Description: Aluminum casting furnace 4**
Construction modification: 1996

**APPLICABLE REGULATIONS:**
401 KAR 59:010, New process operations
40 CFR 63 Subpart RRR, National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production becomes applicable on March 24, 2003.

**Compliance Demonstration Method:**
To determine compliance with the HCL and PM emissions the following equation will be used:

$E= (C*Q*K_1)/ P$

Where E = Emission rate of PM, HC, or D/F, lb/ton of feed
C = Concentration of PM, HCl, or D/F (gr/dscf)
Q = Volumetric flow rate of exhaust gases (dscf/hr)
$K_1$ = Conversion factor, 1 lb/7,000 gr; and
P = Production rate, ton/hr

a) To provide reasonable assurance that the visible emission limitations are being met the permittee shall:
   i) perform quarterly, or more frequently if requested by the Division, opacity reading from each stack or vent using Reference Method 9. Opacity readings shall be conducted while the emission units are in operation. (if reactive flux used)
   i) Perform weekly qualitative visual observation of the opacity of emissions from each stack/vent and maintain a log of the observation. The log shall note:
      1) whether any air emissions (except for water vapor) were visible from the vent/stack,
      2) all emission points from which visible emissions occurred, and
      1) whether the visible emissions were normal for the process
   ii) determine the opacity of emissions by Reference Method 9 if visible emissions from any stack/vent is perceived or believed to exceed the applicable standard.

Compliance with the listed operation limits provides reasonable assurance that the particulate matter emission limitations ($PM/PM_{10}$) are being met. The permittee shall monitor the amount and type of throughputs (specified in the table under operational limits) added to each emission unit during a calendar month.

The permittee must comply with the appropriate monitoring in 40 CFR 63.1510.

**CREDIBLE EVIDENCE:**

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.